GARDEN AND FOREST.

PUBLISHED WEEKLY BY

THE GARDEN AND FOREST PUBLISHING CO.

OFFICE: TRIBUNE BUILDING, NEW YORK.

Conducted by . . . . . Professor C. S. SARGENT.

ENTERED AS SECOND-CLASS MATTER AT THE POST OFFICE AT NEW YORK, N. Y.

NEW YORK, WEDNESDAY, OCTOBER 10, 1888.

TABLE OF CONTENTS.

PAGE.

EDITORIAL ARTICLES:—Forestry Commissions.—The Ailanthus 385
Notes from a Naturalist in Mexico.....*H. J. Elwes.* 386
FOREIGN CORRESPONDENCE:—London Letter .....*Wm. Goldring.* 387
NEW OR LITTLE KNOWN PLANTS:—Tigridia Pringlei (with illustration) *Sereno Watson.* 388
CULTURAL DEPARTMENT:—The Vegetable Garden .....*Wm. Falconer.* 389
The Flower Garden.....*G. C.* 390
Silenes—Rose Cuttings—Gladiolus-flowered Cannas..... 390
PLANT NOTES:—The Weeping Pinus ponderosa (with illustration).....*C. S. S.* 392
Origin of the Le Conte Pear .....*James Hogg.* 392
Tubular Cabbage Leaves (with illustration).....*Professor L. H. Bailey.* 392
THE FOREST:—Forestry in California. III..... .....*Abbot Kinney.* 392
CORRESPONDENCE:—Forest Planting in New England—The Habitat of Black Walnut—The Natural Arrangement of Plants—The Extreme Hardiness of Ferns 393
PERIODICAL LITERATURE..... 394
RECENT PLANT PORTRAITS 395
EXHIBITION:—The Pennsylvania Horticultural Society..... 395
NOTES 396
ILLUSTRATIONS:—Tigridia Pringlei, Fig. 61 389
Pinus ponderosa pendula, at Wodenethe, Fig. 62..... 391
Malformed Cabbage Leaf, Fig. 63..... 392

Forestry Commissions.

THE preliminary reports relating to the forest-wealth of the United States, published by the Census Office six or seven years ago, gave rise to a very general discussion in the public press upon forests and their complex relations to the welfare and development of this country. The most visible outcome of this discussion, perhaps, was the appointment in a number of states of Forestry Commissions for the purpose "of preserving the forests;" and the question has been asked us more than once by members of these commissions how they can perform their duties so that the communities which created these commissions can derive the greatest benefit from these new organizations. In other words, what can Forestry Commissions in states like New Hampshire or Kentucky or Pennsylvania do to save the forests in those states? The answer is not an easy one to give. The states in which these Commissions have been appointed own no forest-land whatever, with the exception of New York, where the state holds great bodies of wild and forest-land, and of California, where land has been presented to the Commission in order to enable it to carry out various experiments in silviculture.

So far as New York is concerned it is evident enough what the Commission ought to do. It controls or can control nearly 800,000 acres of forest-land; laws, still inadequate, certainly, although far in advance of those in any other state, enable them to protect this great property; and they are freely supplied with money for this purpose. It is within the power of the Commission, therefore, to put into practice some of the well known rules under which forests are protected and developed. If the Adirondack forest—or those portions of it, at least, which the state owns—is allowed to suffer, it will be the Commission and the Executive who appointed it who will be to blame.

In other states, where there are no state-forests to administer and in which the Commissions are almost always left inadequately supplied with money, it is not easy to see how they can exert their influence directly. Administrative powers they cannot have, for no state-forests are placed under their control; and the time has not yet come when private owners of forest-property will turn it over to be administered by state-officers. It is evident, therefore, that the field of usefulness for these commissions is limited, and that their work must be advisory and educational. They must become, if they are to justify their existence, the teachers of the people in all that relates to the forest. The Pennsylvania Commission, backed by an active society interested in forestry and equipped with a special organ devoted to disseminating information relating to the forest, has already made a beginning in this direction. But its efforts, as is natural in a new organization, lack system; and this is true of the educational work attempted up to the present time by the Commissions in other states.

As our advice has been asked, we shall be permitted, perhaps, to say that the Forest Commissions of the different States and their friends and all others interested in this country in the question of forest-preservation, will accomplish nothing until they unite together in the adoption of some general scheme for educating the people of the United States in the questions relating to the forest. What is needed in this country now is such a discussion of the forest-question, such an awakening of the intelligence of the American people to the importance of the forest, that it will be possible to secure (1) legislation from Congress, under which the forests upon the national domain may be administered for the good of the whole people of the United States for all time, and not for rings of contractors and timber thieves whose only interest is to cut every stick of timber, and then, after the forests are utterly ruined, abandon the land to hopeless worthlessness. Such an awakening is needed to secure (2) the enactment of laws in every state, under which forest property may be made secure from depredation and needless fires, and a condition of public intelligence which will make it possible, in the case of the forest, to subordinate private interest to the general good. But before this time comes the public of the country must learn that the welfare of the public is often dependent on the forest of the individual, and that if the individual is allowed to do with it all he may wish, he endangers the community. The time probably will come when the farmers of the United States will realize that the pasturage of animals in their woods is not only an injury to themselves, personally, but to the whole community, and will consent to forego this privilege; and they will learn that the clearing of the water-shed of a mountain stream or lake may bring incalculable injury to persons whose names they have never even heard. But the mental development which will make intelligent legislation upon such subjects possible can only come after long years of discussion and education. In inaugurating such discussion and in stimulating such education State Forestry Commissions will find their real and only field of usefulness, and failing in this they will show their unfitness for existence.

The Ailanthus.

A WRITER in a recent issue of the *Rural New Yorker* calls attention to the beauty and value of the much abused Ailanthus tree for planting in city streets. It is indeed one of the best trees that has ever been tried for this purpose, either in this country or in Europe, and no exotic tree, with the exception, perhaps, of the White Willow, has yet shown such capacity for adapting itself to the peculiarities of the American climate. The only possible objection to the Ailanthus is that the flowers of the male plants have an exceedingly disagreeable odor to some people, and that the pollen is supposed to produce catarrhal troubles. But, as the writer in the *Rural New Yorker* points out, this objection can be very readily obviated by raising plants from root-cuttings taken from the female plants only, and by avoiding the use of seedlings, among which there might be expected to be as many males as females. As the Ailanthus grows rapidly from cuttings, a supply of plants

can be secured quickly in this way. A moderately severe pruning of the male trees made in the spring every second year will generally have the effect of stimulating growth to such an extent that the trees will not flower.

Our contemporary hardly does justice, however, to the great economic value of this tree, which is surpassed, in the value of the material which it yields, by few North American trees; and certainly there is no tree which can be made to grow in the United States which can produce so much valuable wood in such a short time. The wood of the Ailanthus must be compared in heat producing properties with white oak, black walnut and birch. It is less valuable than hickory, but hickory—the best fuel, all things considered, our forests furnish—makes a no more agreeable, although a somewhat hotter fire, than ailanthus, which burns steadily and slowly without snapping, giving out a clear, bright flame and leaving a good bed of coals. The amount of ash left after the combustion of the wood is remarkably small. The great value of the Ailanthus, however, as a source of fuel supply, lies in the fact that it makes wood, even in poor soil, more than twice as rapidly as any of our trees which produce fuel of anything like the same value. The fact has not been demonstrated by experiment, but it is safe to say that an acre of ground planted with Ailanthus would yield at the end of thirty years more than twice as much fuel, in bulk and in actual heat product, as the same piece of ground planted with Hickory or Oak.

Ailanthus wood, in spite of the rapid growth which this tree makes, is both heavy and very strong. It neither shrinks nor warps in seasoning, and as material for the cabinet-maker it has few superiors among woods grown without the tropics. In color it is a clear, bright yellow, and although coarse grained, it can be made to take a fine polish.

Take it all in all, for hardiness and rapidity of growth, for the power to adapt itself to the dirt and smoke, the dust and drought of cities, for the ability to thrive in the poorest soil, for beauty and for usefulness, this tree, which the Abbé d'Incaville brought back with him from China more than a century ago, is one of the most useful which can be grown in this climate.

Notes from a Naturalist in Mexico.

FIRST impressions of a new country are often deceptive, and Mexico is such a large and physically varied region, that it would take months of travel to see even the most interesting parts of it; but having now passed through about 1,500 miles of the republic, the impressions made on one who has spent years in Eastern travel, but had never seen the New World, may not be without some interest. A tropical country without tropical heat or vegetation is, perhaps, what one would be inclined to say, and certainly the really tropical parts of Mexico, as regards natural productions, are very small as compared with the bare and treeless highlands. One might, however, say the same of India if one went from Peshawur to Bombay in the cold weather, and, as Wallace has so well pointed out, really tropical vegetation requires conditions which only exist in limited areas of the east coast and larger parts of the western slopes of the highlands of Mexico.

From El Paso, on the United States frontier of New Mexico, to the City of Mexico, one passes for sixty hours, at a slow railway speed, through interminable plains of an elevation varying from 4,000 to 8,000 feet, bounded by low, treeless and desolate-looking mountains, without seeing a single town of any real importance, a single glimpse of forest, or a green spot of earth excepting what is made so by irrigation; and the few small rivers crossed on the route are half or quite dry. The only striking plants seen from the railway are gigantic Yuccas and a few species of Opuntia, Cereus and other Cactaceous plants; but even these are not half so numerous or varied as one supposes from the great numbers which exist in the northern part of Mexico. When at last one arrives at the so-called Valley of Mexico—which is not a valley in the usual sense of the word, but rather a high-lying plateau, containing large lakes which receive the drainage of the hills around, and have no natural outlet—one expects to see a view of unparalleled grandeur, but this is, like many other popular impressions, by no means the case. The distant cone of Popocatapetl and the more picturesque mountain of Ixtaccihuatl, which, though somewhat lower, has more snow at present on it, are no doubt very high and remarkable mountains; but their distance, the haze through which they are seen and the want of beautiful foreground in the view, make the scene, in my opinion, infinitely inferior in grandeur and in impressiveness to many of far less reputation, both in the Alps, the Pyrenees and the Himalayas. As to the climate, one must not be too critical at this season, especially when one has just left a winter of unusual severity, both in the United States and Europe, but it is not my idea of a tropical or even a very nice climate. Bright sun and continual almost cloudless sky, cool air, even cold in the morning, with glare and dust, are the characteristics on the plateau and highlands of Mexico for five or six months of the year. Pine forests, which I had always expected to find one of the features of the country, are diminishing yearly through the unchecked devastations of fire, charcoal-burners, goats and sheep, and I have not yet seen a tract of forest which has not been much injured in this way, or of which the more accessible parts have not been, in a great measure, destroyed. To find this one must go up to 8,000 or 9,000 feet on the slopes in the environs of the City of Mexico, so tempting to a naturalist at this season. We lost no time in going on to Orizaba, about two-thirds of the way in distance to the east coast, and at little more than half the elevation of Mexico City. Here, in the midst of Coffee plantations, Sugar Cane and Bananas, with the volcanic peak of Orizaba 17,000 feet high at a short distance, one can find, by looking for it, some really charming bits of forest, but always in deep gorges or barrancas, and never in easily accessible situations. Birds, as in the Valley of Mexico, are numerous and varied, but not especially striking in color, size or form. Butterflies are fairly numerous, but mostly belong to the family of Hesperidæ, which alone are common at this season. Moths, excepting a few day-flying Ægeriadæ, are scarce, and other insects, excepting Dragon-flies, not very showy or numerous. Orchids are fairly abundant, but few showy ones are now in flower, and though the gardens and plantations round the town are full of beautiful, showy plants in flower, of a more or less tropical character, such as Hibiscus, Erythrina and Datura, yet most of them are exotics. A fortnight's stay in Orizaba enabled me to explore the environs pretty thoroughly without finding a single spot within five or six miles which could be called a first-class collecting ground, though, at the same time, I feel sure that Orizaba would yield a very large number of plants, birds and insects to a resident collector. Tuxpango, about three hours to the south-east, is the best place I found, and here are some very picturesque waterfalls and a lovely tropical gorge, with some fine Coffee plantations under the shade of the forest, which pleased us more than any spot yet visited. On the mountains around Orizaba, which, however, are very steep and pathless, there are some rich and interesting spots in which I found a few fine plants and rare insects; but the sky, though generally bright in the morning hours, usually clouded by noon, and the weather was not nearly so hot as one would expect in latitude 19°, at 4,000 feet elevation.

Going on from Orizaba towards Vera Cruz, one passes through a very rich and fertile country, where Bananas, Pineapples, Coffee and Sugar are largely grown about Cordoba, and here in the plantation of M. Tonel, a Belgian gentleman, who has been settled in Mexico for many years, I saw a large number of species of Palms, and very many interesting and beautiful tropical and sub-tropical plants. Indeed, I should say this was by far the most interesting garden in Mexico, as the proprietor has a Belgian gardener, and goes to much trouble and expense in making his plantation rather a botanic garden than an ordinary Coffee plantation. But still there is no virgin forest until one gets on towards Attoyac, where the railway passes through some scenery of the true tropical character, and in the few hours I was able to spend here I saw what I had been hoping for so long. As, however, Attoyac is said to be very unhealthy at all seasons, and there is no accommodation for a stay, I could only regret my inability to give it a thorough exploration, though probably there is no great amount of novelty to be expected, this part of Mexico having been better worked by naturalists than any other. Below Attoyac you get into the dry plains bordering the coast, which are, for the most part, covered with low, thorny or scrubby forest or coarse, wiry grass, and infested with small insects called *pinolillos*, which, judging from the amount of precaution and trouble the inhabitants take to get rid of them, must be very disagreeable indeed. A gentleman who got into the tram-car on our way up to Jalapa, two stations out of Vera Cruz, had got amongst

these *pinolillos* in passing through some bush, and spent over half an hour, with the assistance of several other passengers, in picking them out of his clothes. A magnificent yellow-flowered tree, figured in Brologsa's "Centrale America," was the most conspicuous ornament, at this season, of these dry, low-country jungles, for I can hardly call them forests, and here alone have I as yet seen Palms growing as a conspicuous feature in the scenery, though several dwarf and slender climbing Palms were common in the gorges about Orizaba and Attoyac, together with two fine plants belonging or allied to the *Musaceæ*, both in flower at this season.

Vera Cruz, though unusually cool and healthy for the time of year, owing to the heavy northerly gales which have prevailed during most of the month of March, and which account for the cloudy, cold weather at Cordoba and Orizaba, is not a place that would tempt any one traveling for pleasure to stay in; and as its hotels are detestable, we lost no time in getting off to Jalapa, which lies on the eastern slope of the mountains about fifty miles north of Orizaba. The old road up to Jalapa is said to give an excellent idea of the gradual change of climate and vegetation from the coast upwards; but if this is true, I cannot say the same of the new tramway, which takes one over the forty miles and 5,000 feet of ascent in about eleven hours, mules being the motive power, as on many other lines in Mexico. The first half of the way is all through the dry coast jungle or chapparal, as it is here called, full of Mimosas and other thorny trees and bushes. *Bromeliaceæ* are very conspicuous and abundant, as in most parts of this region, and several very fine arborescent Bonaparteas and gigantic Cereus were common at about 2,000 feet. But on the whole line there is not a single mile of forest which can be called fine or luxuriant, and water is so scarce that the villages on the route are both few and poor. One fair-sized river is crossed at Puente Nacional, and here we saw some lovely flowering trees, though the speed of the mules, except on steep ascents, did not allow much botanizing. A very graceful, feathery Bamboo, growing about fifteen feet high, appeared at about 3,000 feet in one place only on the road, growing gregariously among shrubs and trees, but beyond this I saw nothing very striking. When we got up to about 4,000 feet, an open, grassy country, with occasional trees, and small groves in the ravines, was entered, which, through the influence of a small, driving rain and dense mist, made the country look more like the Highlands of Scotland than Mexico; but, notwithstanding the cold, hedges of wild Pineapples showed that the mean temperature must be high. Jalapa itself, when reached, is decidedly the most enjoyable place of residence for a naturalist that I have yet seen in America. The climate is damper and cooler than that of any place of similar elevation I have seen. There are numerous bits of very charming country of varied character within a walk of the town. A very tolerable hotel, curé, and law-abiding inhabitants, a capital naturalist's servant, named Alyssio Trujillo, who accompanied us for some time, and can both shoot and skin birds well, and fine weather, all combined to render our stay at Jalapa a bright and delightful sojourn. There is between Jalapa and Coantepec a good deal of real virgin forest, abounding in plants, birds and insects, and having at least two broad and good roads through it, without which collecting in a virgin forest is so difficult and incomplete. At this season the forest, which consisted largely of Planes, Oaks, Liquidambers, and other trees of a temperate aspect, was dry and pleasant to go about in, and numerous small clearings in it made a variety which, if not carried to the extent which it generally is, is favorable to all animal life. On the north side of the town, at about an hour's distance, is a delightful park-like grazing country, covered with groves of trees, and intersected by richly-wooded gorges, a very paradise for birds, and having in fine weather a perfect climate, though it is said that the rainy days in the year outnumber the fine ones. Farther on towards the north we did not go, but Mr. Godman, who spent a month in and about Misantla, three days' ride north of Jalapa, describes the deep descent from the table-land to the dense forest as very fine, and the country extremely rich and productive to a naturalist. North-west of Jalapa is the Cofre de Perote, a volcanic mountain 13,000 or 14,000 feet high, with fine Pine forests on its slopes, but at this season the high country was too cold to visit for collecting purposes, and I am unable to say whether the Pine forests on this slope are as much damper and richer in herbaceous plants and accompanying insects than those of the central plateau, as one would expect them to be. We returned from Jalapa to Cordoba on horseback, a ride which, for varied vegetation, beautiful scenery, and general interest would be hard to beat in Mexico; and though on two of the five nights spent on the road our lodgings were of a very primitive character, yet a lady was able to enjoy it thoroughly. Some of the barrancas—five crossed on this ride—are very deep and perpendicular; two rivers have to be passed on rafts, the horses swimming or wading, but the ride along the edge of the Barranca de los Pescados, ascending from 2,000 to about 5,000 feet, on the second day, has many very fine views indeed, and the peak of Orizaba, both on this and the next day, is an object of culminating importance. In the Oak forest between Las Balsas and Pinea *Bromeliaceæ*, Orchids and other Epiphytes were in the greatest abundance. I gathered thirteen or fourteen species of Orchids in an hour from the low trees without getting off my horse. This was between 3,000 and 4,000 feet, but a few miles further on we got into a region where, though the forest was much finer and denser with green undergrowth, Orchids were not so numerous or varied.

We saw a fine dark crimson Hibiscus, with a trailing habit, in this part of Mexico only, and a splendid Gesneriaceous plant of great size growing in the damp, shady ravines, together with many Tree-Ferns and other large and handsome Ferns, which seemed more abundant about San Bartolo than anywhere I have yet been. In fact, we thought San Bartolo as good a place for collecting as any in this part of the country. It is charmingly situated in the midst of a good deal of virgin forest, at about 5,000 feet, and within easy reach of deep, hot gorges full of purely tropical vegetation, and close under the high slopes of the Volcano of Orizaba.

Beyond Huatusco, where we slept on the third night from Jalapa and found very fair quarters, the country becomes less broken and picturesque, though still very pretty. Returning to the high plateau of Mexico, we found the contrast between the dry, dusty, windy climate and the region we had just left, even more striking than at first. Round Pueblo, where we stayed a week, there is little or no indigenous vegetation, except here and there on dry rocky hills and in the few places where the soil is too poor for cultivation. The Malinche, an extinct volcano of 13,000 feet, is covered on its lower slopes with stunted Pines, which are fast succumbing to the attacks of the woodman and charcoal burner; but the only spot where we have found any forest at all likely to contain much of interest is at El Pinal, about twenty-five miles out on the railway leading to Los Llanos, and here are a good many birds and insects quite different from those yet seen, and some *Vaccinia* and other plants, which are apparently quite at home on the dry sandy granite, of which these hills seem to be mostly composed.

Cirencester, England. *H. J. Elwes.*

Foreign Correspondence.

London Letter.

A GOOD number of first-class certificates were awarded to new and rare plants and flowers at the meeting of the Royal Horticultural Society to-day, the most important of which was the Nepaul Lily (*Lilium Nepalense*), which has flowered here for the first time in cultivation. It was introduced and shown by Messrs. Hugh Low & Co., of Clapton. It is distinct and beautiful, and its certificate-vote was unanimous. The only Lily with which I can compare it is the rare *L. polyphyllum*, also a native of the Himalayas, which is somewhat similar in growth and flower. The stem of *L. Nepalense* is slender, about three feet high, sparsely furnished with short and rather broad, deep green leaves. Each stem is terminated by a single flower, which is about four inches across, and with sepals and petals reflexed. The ground color, an intensely deep purple-crimson, is mottled with yellowish-white, and the tips of each petal are of the same pale color. It cannot be termed a showy Lily, but it has a peculiar form and color which every one admires. Mr. Baker, the authority at Kew on Lilies, had never before seen it in flower, though he knew it well by descriptions and illustrations. It is a native of the temperate portions of the western and central Himalayan region, and it may not prove a perfectly hardy plant in England. If, however, it is not hardy, it is a beautiful green-house Lily.

The certificated plant next in importance was the exquisite white-flowered variety of *Oncidium ornithorhynchum*, an Orchid as rare as it is beautiful. It is the counterpart of the typical form now common, except that the

flowers instead of being pink are of ivory whiteness with golden-yellow crests. They possess the same delightful perfume which some compare with the scent of newly-mown hay. The flowers are small, but very numerous, and are borne on a loose spike which drops in a graceful way. The exhibitor of this treasure was Mr. B. S. Williams, of Holloway nurseries.

The lovely *Romneya Coulteri*, of California, introduced over a dozen years ago, was exhibited for the first time in flower to-day, though it has flowered several times in various gardens of late years. Mr. T. S. Ware showed it on this occasion, and its beauty so won the committee that its certificate-vote was unanimous. [This plant was described in the issue of this Journal for August 15th.—Ed.]

A variety of the well-known Cape bulb, *Tritonia aurea*, with crimson blotches on the orange-red sepals, was shown by Mr. James O'Brien, and received a certificate. It differs from the typical form chiefly in the color of the flower. The crimson blotches are conspicuous, and increase its beauty. This Tritonia is one of the showiest of bulbs for the green-house during August and September, and in some of our southern gardens it is perfectly hardy.

Eremurus Olgæ, a noble Liliaceous plant introduced a few years ago from Turkestan, was shown by Mr. T. S. Ware, and received a certificate as a first-rate hardy herbaceous plant. All the Eremurus have long narrow leaves like an Asphodel or Kniphofia, and produce tall spikes crowded with small blossoms. *E. Olgæ* has a flower-stem rising from three to five feet in height, and for fully half its height is furnished with small white flowers. The flowers expand from below upwards, and as from six to nine inches of the stem carry expanded flowers at a time, it is some weeks before the spike is exhausted. It is quite hardy here.

The Chrysanthemum season has already commenced, the first new variety being shown to-day; it was so fine that no hesitation was made in certificating it, notwithstanding the many fine early varieties we have. This sort is called Mrs. Hawkins, and is a sport from another fine variety called Wormig's Yellow. The flowers of Mrs. Hawkins are from five to six inches across, very full but flat, the florets being long and narrow. The color is a rich golden yellow. The vigorous growth, fine habit and floriferousness of the novelty had a good deal of weight with the committee. From this date onward to February and March we have Chrysanthemums at every meeting, so that we might well say that their season extends through half the year.

A very fine new white Carnation named Madame Carle was certificated on account of its free growth, abundant bloom, fine form and the purity of its strongly perfumed flowers. It is a first-rate market variety, as it flowers almost constantly. The exhibitor was Mr. May, one of the chief growers for market, who also showed finely flowered specimens of such favorite sorts as Miss Joliffe, pink; Dr. Raymond, crimson-clove; Pride of Penshurst, yellow; and Andalusia, which last is considered the finest yellow of all for market, as it is hardly ever out of flower. The color is not so pure as that of Pride of Penshurst; but the flower is finer and fuller, while the growth and habit is vastly superior.

A new hybrid Dianthus named Splendor was certificated as a first-rate border plant on account of its dwarf, compact growth, profusion of bloom and rich color. It is a cross between *D. Heddewigii* (generally treated as an annual) and the Sweet William (*D. barbatus*). The progeny is quite intermediate both in growth and flowers, which are about one inch across, with fringed petals and borne in loose clusters. The color is an intensely deep crimson with mottlings of black on the petals. The exhibitor of it, Mr. R. Dean, also showed a double white variety of *D. Heddewigii* called Snowdrift, with flowers of remarkable purity.

Among the crowds of new Dahlias put before the committee, including double, single and cactus varieties, there was but one considered worthy of a certificate. This was a single Dahlia named Mikado, a large well-shaped flower of a bright Indian red streaked and tipped with yellow. It won a certificate by a narrow majority, as some of the committee, myself included, considered it by no means beautiful. In Kelway's collection of Gladioli there were numerous new seedling sorts set up for certificates, but only two were selected. These were Castro and Besler, the first having enormous flowers of a delicate carmine-pink tint with white centre and lower petal, while the second was a smaller flower and spike, vivid crimson-red flaked with a deeper tint. The hundred or more spikes shown to-day were, if anything, finer than those shown a fortnight ago, the splendor of which I alluded to in my last letter.

Besides the first class certificates awarded, there were two Orchids that received botanical certificates, which mean that although the plants are interesting botanically or are rare, they do not, in the opinion of the floral committee, possess sufficient merit for general cultivation. These Orchids were *Disa graminifolia* and *Lælia* (*Trigonidium*) *monophylla*, both of which, in my estimation, possess exquisite beauty, though small in growth and flower. The Disa is a South African species, having tiny tubers that send up very slender flower-stems before the grass-like foliage. The flowers are less than an inch across, but are of a lovely purple-blue color, which is so rare among Orchids. The Lælia is a pretty plant, too, of tiny growth, somewhat like a Sophronitis. Its flowers are about one and a half inches across, and of a bright orange-scarlet. Though so small, this Orchid is one of those for which extravagant prices have been paid, perhaps more on account of its rarity than its beauty.

Lilies formed a conspicuous feature in the show, and of *L. auratum* alone there were probably a hundred spikes, representing numerous varieties. Our king of Lily-growers (Mr. G. F. Wilson) brought some wonderful specimens of *L. auratum rubro vittatum*, the variety with enormous flowers with each white petal broadly banded with blood red. He also had huge stems of *L. auratum*, var. *platyphyllum*, with flowers nearly a foot across, while from other gardens came the Virginale variety, whose flowers are devoid of the spots and blotches seen on the petals of the ordinary kind. The various forms of the Tiger Lily, *L. tigrinum*, were also in their full glory on this occasion.

London, September 11th, 1888. *W. Goldring.*

New or Little Known Plants.

Tigridia Pringlei.*

THE Tiger-flower, the well known *Tigridis Pavonia*, a native of the valleys of southern Mexico, early attracted the attention of the Spanish conquerors, and became known by reputation under the name of *Tigridis flos* long before it had been seen by any botanist. It was first described by L'Obel (Lobelius) in his *Plantarum Historia*, published at Antwerp in 1576, where he gives a very rough but recognizable wood-cut of the plant from a colored figure which he had received from his friend, Joannes de Brancion. Hernandez also describes it in the *Historia Plantarum Novæ Hispaniæ* (1651), giving the same Latin name, *Flos tigridis*, and the Aztec name, *Oceloxochill*. He speaks of it as growing in gardens and cultivated fields about the City of Mexico, as though it were cultivated both for its flowers and for its edible bulbs. These descriptions, however, were so incomplete, that Linnæus was unable from them to place the plant systematically, and he made no mention of it in any of his works. In the

*T. Pringlei, Watson, n. sp. Bulbs small, with fusiform roots; stem slender, one or two feet high, bearing two or three winged-plicate leaves and a single flower; spathe-bracts three inches long, inclosing the peduncle; perianth with a campanulate base, blotched within with crimson, the sepals two and a half inches long, with a reflexed scarlet limb; petals broadly cordate or reniform at base, the narrower triangular-ovate, acute limb not spotted; stamineal column one and a half inches long, the stamens five to seven lines long and equaling the style branches, which are cleft to the middle; capsule narrow, very obtusely angled, two or three inches long by three lines wide.

later years of his life he received many contributions from Dr. José Celestino Mutis, of Santa Fé de Bogota, especially of figures illustrating the flora of that region, and among them was included this species, which Mutis appears to have received from Mexico and to have cultivated in the botanic garden founded by him at Santa Fé. Upon the

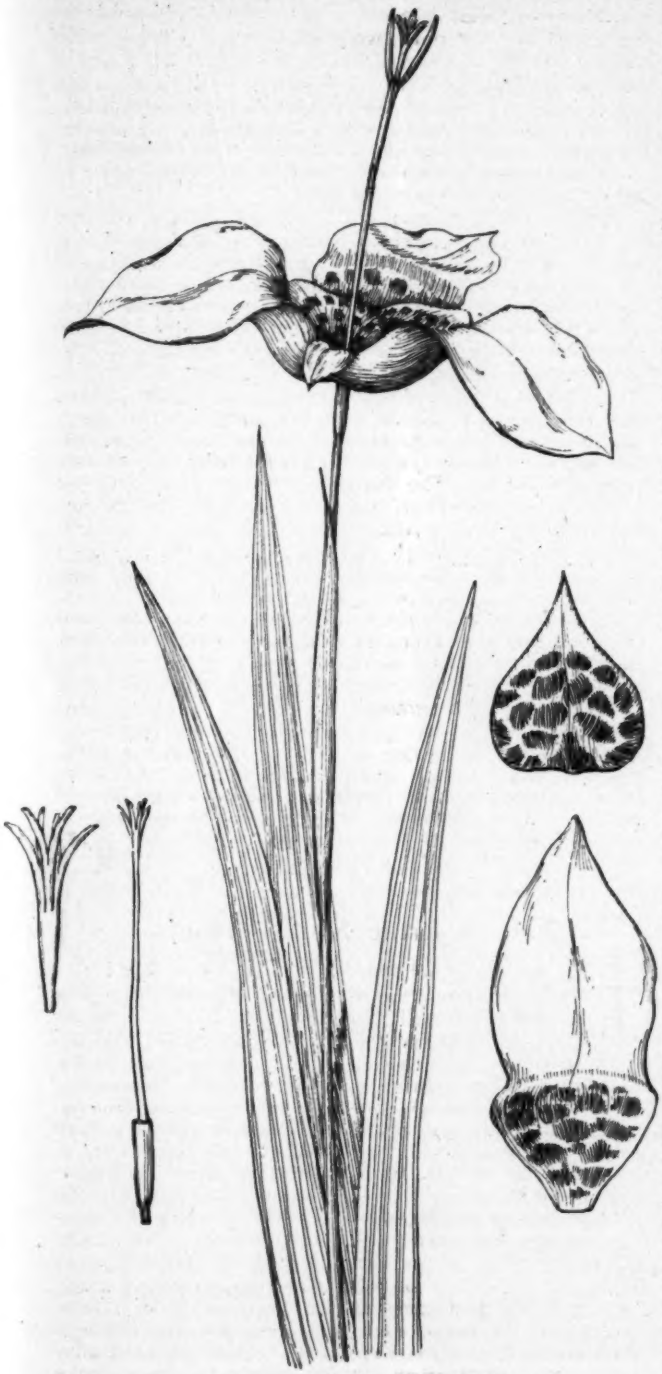

Fig. 61.—Tigridia Pringlei.—See page 388.

data thus furnished, the younger Linnæus referred it to the south African genus, *Ferraria*, and published it in 1781 as *F. Pavonia*. The genus *Tigridia* was founded upon it by Jussieu in 1789. It was soon after introduced into England, where it first bloomed in 1796, just 220 years after the description by L'Obel, and on account of its brilliant, though fugitive, flowers, it has maintained its place in gardens ever since.

This species is the only one hitherto known belonging to the true *Tigridia* section of the genus, having large flowers and decurrent stigmas. Several forms are now to be found in cultivation, varying scarcely at all in the form and relative size of the parts of the flower, nor, I think, in the general character of the markings, but very greatly in the coloring. The section *Beatonia*, with much smaller flowers, and capitate or less distinctly decurrent stigmas, includes half a dozen species, natives of tropical Mexico, with one in Peru and Chili, and none of them common in cultivation.

T. Pringlei, which is the subject of Mr. Faxon's drawing for this number of Garden and Forest, is a recent discovery made by Mr. C. G. Pringle in the mountains of Chihuahua, much farther to the north than any other species has ever been found. As the figure shows, it is very closely related to *T. Pavonia*, and if color alone were to decide, it might be considered a variety of it, though differing markedly even in that respect from the old species. The base of the sepals is blotched (rather than spotted) with crimson, with a border of orange, the reflexed blade being of a bright scarlet-red. The petals have the base blotched and coarsely spotted with crimson, with a well defined, deeper-colored, brownish margin, the blade orange, tinged with scarlet, but not at all spotted as in *T. Pavonia*. The more essential difference is in the form of the petals, which have a broadly cordate or reniform base, with a much narrower, small, triangular-ovate, acute blade. The sepals also are smaller and more oblong in outline. In cultivation at Cambridge this season the bulbs commenced to bloom in July and continued to flower for several weeks.

S. W.

Cultural Department.

The Vegetable Garden.

SPINACH, Cauliflower, Brussels Sprouts, Celery, Lettuces and root crops will now form the bulk of our seasonable vegetables from out-of-doors, but where precautions against frost have been taken, we may still have Snap Beans, Tomatoes and Cucumbers. There has been frost in this neighborhood, but on account of our proximity to the sea, there was none here. Our vegetable supply is still unbroken. Evergreen and Squantum Corn sown June 26th are still yielding good ears; Cory and Early Marblehead sown July 19th and July 23d are just about fit for use. These last two kinds were planted for use in case the larger varieties did not continue tender till the end of the season, but so long as any of the first three can be had in fair condition, the extra early sorts are not wanted. On the 23d of July I sowed some Golden Tom Thumb Pop Corn, and the ears are now (October 1st) not only full, but the kernels are hard and the crop almost fit to gather. It matures more rapidly than any other that I have tried.

Snap Beans are still excellent. Mohawks sown August 9th are now in use, and Valentines sown the same time will be ready in a few days. Calico sheets are spread over these when frost is threatened. Snap Beans were sowed on August 13th, to be covered with frames and sashes about the end of September or just before frost. These sowings consisted of Earliest Red Valentine, Thorburn's Extra Early and Early Etampes. Both the Valentine and Thorburn's are now in bloom and podding nicely, but neither of them is yet fit for use; the Early Etampes, however, are not only in bloom, but a large number of pods are in excellent condition for the table. By banking around the frames with earth or manure and covering them over at night with mats or thatch, this Bean crop can be preserved in good condition well through October.

The Turnips now in use were sown August 10th; they are Purple Top, White Globe and Strap Leaf, and are about two inches in diameter, tender and solid. Old or overgrown Turnips are very poor vegetables. As Turnips will have good growing weather till November, many of these sown August 10th will be too big for keeping over winter, but others, sown a fortnight later, will be better for winter use. The Turnip

Beets, namely Egyptian and Eclipse, now in use, were sown July 18th, and the same sorts, sown July 27th, are also fit for use. But Long Blood Beets sown July 27th are not yet fit for pulling; they need a longer season of growth.

Water and Musk Melons, Cucumbers and Squashes are now past bearing and should be cleared off the ground. As soon as Corn, Tomatoes and Snap Beans have been bitten by frost, they, too, should be cleared off the ground. Limas are very tender. Where they have been grown thickly together it often happens that while the tops get frozen, many fresh leaves and young Beans along the stems escape unhurt; in such cases it may be well to let them alone till they are cut down by a more severe frost.

Celery has grown finely this season; the recent cold weather has suited it exactly, but, until the last week of September, we could hardly get dry weather enough to permit the earthing up of the crop, and to bank it up while it is wet causes it to rust and rot.

Frame crops now demand attention. It is useless to sow Radishes out-of-doors or in cold frames after this time of year. We must raise them in hot-beds or in a green-house. Wood's Early Frame, French Breakfast and Early Red Turnip are capital sorts. Snap Beans, Tomatoes and Cucumbers here have been covered with frames and sashes, and in the event of cold nights, mats or thatch will be spread over the glass. Some earth or manure has been banked up against the frames to help keep them warm. A few weeks hence these frames and sashes will be at liberty for use in covering Spinach and Cauliflower. Fill up all spare frames with Lettuces, keeping the large plants in frames by themselves and the small ones by themselves. But be careful at this time of year not to keep frame crops close and warm, else they will perish during severe weather in winter. A temperature which just escapes frost is the best for large Lettuces, and a few degrees of frost will do no harm to small Lettuces, Parsley or Cabbage plants.

Wm. Falconer.

Glen Cove, N. Y.

The Flower Garden.

IT often happens that after our first frost some bright, warm weather comes, and Dahlias bloom out again quite generously. But after tender plants are sharply nipped their partially recuperated beauty seldom compensates for their ungainly appearance, and it is often better to clear them away at once. Bulbous and tuberous rooted plants should be cut over close to the ground, and brought indoors and stored away for the winter, each kind according to its nature. The ordinary Cannas when lifted may be shaken free from earth and stored, one deep, on a shelf or floor in a dry, frost-proof cellar or shed, or under a green-house bench, but the finer kinds, as Ehemanni, should be placed on a moist earthen floor or planted in earth in a green-house or warm frame—anywhere where they may be kept growing. Dahlias may be treated as common Cannas. Montbrietias may be lifted and kept dry over winter after the fashion of other bulbs, but it is better to keep the roots in moist earth, either in pots or boxes, or planted out in benches or frames. Green-leaved Caladiums live well enough when wintered in the same way as Dahlias, only it is unsafe to keep them in a temperature lower than 45°. Tuberoses should be kept dry and warm; but Mr. Michels, of St. Louis, has found that the new Albino Tuberose must be kept growing in winter in the same way as Ehemann's Canna. Last winter he lost three-fourths of those ne dried off in the usual way. Tigridias should be tied in bunches and hung in a shed for some days, sometimes weeks, and then the bulbs, with stems stripped off, should be stored on shelves; but in all cases preserve them from frost, also from rats, which are very fond of them. Rats are also very fond of the tubers of the fancy-leaved Caladiums. Young bulbs of *Galtonia* (*Hyacinthus*) *candicans* are hardy enough, but old bulbs rot in the ground in winter. But as lifting and saving them indoors over winter are very little trouble, it is the safer plan to practice. Gladioli should be treated like Tigridias; but all the bulblets about the base of the large bulbs should be saved. These bulblets, sown next spring in drills about twelve or fifteen inches apart, and as thick as dwarf Peas, will, most of them, bloom when two years old. *Bessera elegans* may be relieved at once of its leaves and stem and the bulbs wintered in paper bags or on shelves. *Milla biflora* may be treated in the same way, except that it does not keep as well in a dry state as in slightly moist earth. Of these last two bulbs and of *Cyclobothra flava* there is likely to be a scarcity in the market, owing to some trouble at the source of supply in Mexico. *Ismene calathina* and Amaryllises may be lifted and kept dry over winter, or in slightly moist earth or sand; in a temperature of over 45°. Tuberous Ipomæas, Erythrina roots and Daturas that have been grown and flowered in summer, may now be shortened back and kept dry over winter, or, better yet, in moist earth, or laid on an earthen floor.

G. C.

Silenes.—Among these are pretty perennials, biennials and annuals; nearly all are hardy, easy of culture, and excellent plants for the rock-garden. A soil composed of loam, peat and sand is most favorable for their growth. They will not thrive in heavy soil or in the shade. They can be propagated by seeds, division or by cuttings. *S. acaulis* forms a neat evergreen cushion, with white flowers. *S. alpestris* grows about six inches high, and its white flowers are borne in abundance. *S. Elizabethæ* is a rare and beautiful species, rather tender, with large, deep rose-colored flowers. *S. Hookeri* has large pink flowers, two inches or more in diameter. Coming from California, it is not hardy here. *S. maritima, fl. pl.*, is a very free-flowering, double white variety, like the type in every other way. It is a neat trailer, its handsome, glaucous-green foliage clothing the stones completely. *S. pendula*, var. *compacta*, is the variety so much used in England for spring bedding. It is most effective when planted amongst yellow Tulips or blue Hyacinths. *S. Pennsylvanica* is a common native, but very pretty species. *S. Schafta* flowers at a season of the year when all other Silenes are past. A mass of it in the rock-garden here was strikingly beautiful in late August. It is one of the best, and although it winter-killed with me in New Jersey, it proves quite hardy here. The flowers are a lovely pink-purple. *S. Virginica*, the Fire Pink, is one of the most striking, and one of the few hardy plants with clear scarlet flowers.

T. D. Hatfield.

Wellesley, Mass.

Rose Cuttings.—It is now claimed that blind wood of Roses, if made into cuttings, will produce equally floriferous plants with those made from flowering shoots of the same varieties, and, judging from some extended tests made by good growers, this seems to be an established fact. This view is exactly opposite to that held by many growers in former years, and though contrary to the traditions of the trade, yet it seems to be quite reasonable. When blind shoots are used for this purpose, they should be clean, healthy pieces, such as are frequently produced by Catherine Mermet, The Bride and other varieties during the winter; for, though both of the above-mentioned Roses are very free in regard to bloom, they also make a considerable amount of non-flowering wood in a season, and this growth, when in a healthy condition, makes a desirable addition to the cutting-bench. There are some conservative growers who still prefer to make cuttings only from shoots which have produced flowers, but it frequently happens that some difficulty is found in procuring enough wood of this class at the time when it is wanted most, and therefore it is advisable to put in all the healthy wood at command, as weak or sickly plants can easily be discarded if any such are found at the time of planting. And when it is thought desirable to have a stock of young Roses for early sales, or for summer use, it will be found best to commence putting in cuttings as soon as they can be obtained in the fall; for instance, in October or November, or earlier if suitable wood is to be had without injury to the crop, because plants struck at this time, and shifted on as it becomes necessary, will be in good condition for early planting the following season. Of course these remarks will be understood to apply especially to Roses of the Tea class, such as are used for forcing.

Philadelphia. *W. ——.*

Gladiolus-flowered Cannas.—We quote the following from *The Garden*, London, in addition to what was said last week concerning these plants, because we believe they have a most promising future:

"This very expressive name has been given to a new class of Cannas conspicuous for the beauty of their flowers, which much resemble those of a Gladiolus in form and size. Hitherto, with a few exceptions, the Cannas have been grown more for the beauty of their foliage, which imparts to them a very dignified aspect, and is, moreover, quite distinct. Usually, plants which are grown for beauty of foliage alone, do not produce very striking flowers, and it has been so for many years with the Cannas, but these new varieties, which are of French origin, show evidence of a rapid and marked improvement, which probably will continue, and we may shortly look for something quite

Fig. 62.—Pinus ponderosa pendula, at Wodenethe.—See page 392.

startling in this direction. We recently noted some in flower at Tottenham, especially good being Victor Hugo, a variety with dark leaves, and large, bright red flowers, equal in size to those of Canna Ehmanni, and Edourd André, with flowers of a deeper red, but quite as large; Queen Victoria, with spotted yellow flowers, was also good. The Cannas do not receive half the attention they deserve. Where their culture is practicable, they are most effective in the open air in summer, and serve an admirable purpose by carrying the eye gradually upwards from the dwarfer subjects usually employed in the

embellishment of the flower garden to the taller forms of tree and shrub life. They will also be found very useful when grown as specimens in pots for conservatory decoration, and, by reason of the hardiness and texture of the foliage, their beauty and freshness last a long time. We owe all the best of our Cannas to the French, and it is to be hoped they will continue in their good work of improvement, and give us some varieties that, for beauty of flower, will eclipse anything previously seen. The varieties above referred to amply show the capability of improvement."

Plant Notes.

The Weeping Pinus ponderosa.

THE illustration upon page 391 represents one of the most interesting coniferous trees which can be found in the Eastern States. It is a specimen, and the only specimen which is known, of the well known Yellow Pine of the Pacific forests (*Pinus ponderosa*), in which all the branches have assumed a decided and permanent weeping habit, giving to this individual a grace of outline quite unknown to the Yellow Pine in its normal form. This tree, with a number of others, was imported from the Knap Hill Nurseries in England in 1851, when only a few inches high, and planted by Mr. Henry Winthrop Sargent in his garden at Wodenethe, in Fishkill-on-Hudson, in this State. It is now fifty-nine feet in height, with a trunk diameter, three feet from the ground, of twenty-one and a half inches, and it is still growing rapidly. The origin of the seed from which this tree was raised is unknown, although it no doubt came from Oregon or California, as the seeds of trees were not collected on the mountains of Colorado until several years after this Pine had been planted on the banks of the Hudson. Its perfect hardiness, therefore, must be taken as an exception to the now generally acknowledged fact that the Conifers of the Pacific-coast region are unable to support, for any length of time, the climate of the northern Atlantic States.

But the real interest in this tree is not found in its graceful and unusual habit, or in its hardiness, but in the fact that it was planted and beloved by the man to whom, more than to any other, Americans owe their knowledge of cultivated trees, and who, for nearly half a century, devoted himself, with an energy and enthusiasm which no disappointment ever dulled, to experiments in tree culture. The friend and pupil of Downing, he extended the fame of his master, and by his example, his precepts and advice inspired what is best in American gardening of to-day. This pine may well serve to keep green the memory of Henry Winthrop Sargent, and to remind the present generation how much it owes to his disinterested labors in their behalf.

A picture of this tree was published in the *Gardeners' Chronicle*, of London, August 24th, 1878, from a photograph taken in that year. Our illustration is from a recent photograph by Mrs. Winthrop Sargent, to whom we are indebted for its use. *C. S. S.*

Origin of the Le Conte Pear.

AT page 268 of the Report of the United States Agricultural Department for 1886 Mr. John L. Harden, of Walthourville, Ga., makes the following statement in regard to the origin of this Pear:

"Major John Le Conte, of New York City (and afterwards of Philadelphia), in the year 1850 had a number of fruit trees and other plants put up for his niece (Mrs. J. L. C. Harden, my mother), of Liberty County, Ga., at a nursery in New York or Philadelphia (most probably New York), and among them was a rooted cutting of what was marked 'Chinese Sand Pear.' Major Le Conte was informed by the proprietor of the nursery that the Pear was only fit for preserving, as it never matured in this country. Contrary, however, to expectation, it matured in Liberty County, and proved to be a fine, productive Pear. The original tree is now owned by my mother's heirs, and is still vigorous, although not cultivated in any way, and produces from ten to twenty bushels each year."

This statement enables me to clear up the mystery of its origin. Some six or seven years previous to 1850 my brother, Mr. Thomas Hogg, obtained from Messrs. Potter Bros., of Providence, R. I., a plant of *Pyrus sinensis*, the Chinese Sand Pear, or Snow Pear, as it is called by some. This plant was grafted on a stock of *Pyrus communis*, our common Pear. It was planted out in the nursery at Yorkville in a plot of ground devoted to testing new varieties of fruit trees, and was surrounded by a number of Pear trees of different varieties. In due course of time the tree fruited, and from the seeds thus obtained young trees were grown, one of which was given to Major Le Conte, and is no doubt the tree noticed by Mr. Harden. It is doubtless a hybrid, produced by the pollenation of a flower of the Sand Pear with the pollen of some one of the surrounding Pear trees. I remember that there was one tree near by with fruit very much the shape and size of the Le Conte, but I cannot recall its name. The Sand Pear tree we had bore large, apple-shaped fruit, the stalk being deeply inserted, of a deep orange color, somewhat russeted and thickly studded with raised brown dots. The skin felt as though sanded over by these dots. Otherwise the fruit was very handsome to look at. Dorr and Dr. Lindley describe the fruit of the Sand Pear as warted, bony and gritty, but the fruit of our tree was in no wise warty or bony, being only gritty. It was not edible, but made a fairly good preserve, and always ripened its fruit. Mr. Harden is mistaken in saying that Major Le Conte was told that it would not ripen its fruit.

Fig. 63.—Malformed Cabbage Leaf.

My opinion is that our climate, or its being grafted on a common Pear stock, had something to do with ameliorating the character of the tree we had, and rendered it more susceptible of hybridization. It is a very unusual instance of the effects of hybridization, as the product is so very unlike the mother tree, that if the latter were not known there would be great doubts as to its being one of the parents, judging by the fruits.

I may add that the Sand Pear is quite an ornamental tree. It has long shoots of a greenish, changing to purple, color, thickly dotted with white spots; large, lucid, almost evergreen leaves; and large white flowers slightly tinged with pink.

New York. *James Hogg.*

Tubular Cabbage Leaves.

THE interesting monstrosity of Cabbage leaf described and illustrated in Garden and Forest, p. 296, is essentially the same, evidently, as the *Brassica oleracea, costata Nepenthiformis* described and figured by the elder De Candolle in Trans. Lond. Hort. Soc., v. 12. A monstrosity of similar character, but involving the whole first true leaf of a Cauliflower plant, was observed by the writer this year. It is here figured.

L. H. Bailey.

The Forest.

Forestry in California.—III.

FOREST economy is slow in its returns, a new growth for timber requiring many years, which is discouraging to short-lived man; consequently, men cut forests for commercial purposes, but it is rare, indeed, that a forest is ever planted. So also much of forested land in new countries must be cleared as population increases, irrespective of the demands of commerce and whether the result be health or sickness.

But there is a point, variable according to the climate and topography, beyond which the destruction of forests diminishes the capacity of the country to support population, and, while at first increasing the arable area, in the end diminishes this through the action of torrents in washing the soil from some places and covering others with sand and bowlders, while at the same time the whole country becomes more exposed to extremes of flood and drought and the climate more variable and unfavorable to agriculture, the winds stronger and the springs less reliable and often extinguished.

It is by educating the people in these truths of the effects of excessive and unwise forest destruction that we must hope to

save our forests. The time has come for this intelligent American people to follow the lead of France, Germany, Austria and the civilized powers of the world in averting, by timely measures, a great disaster. I shall now briefly set forth the manner in which the beneficial effects of forests in agriculture are produced.

The normal evaporation from bare land is much in excess of that from lands in woods. An experiment made with two jars of equal size, covered with wire gauze to protect them from flies and insects, one set under a bush and the other in a place sixty feet from the surrounding trees, but thus protected from wind, showed the evaporation in the open to be more than double that under the bush, the exact figures being: bush jar, .863 evaporation; jar in the open, 1.854.

Mr. W. Blore, who made this experiment, calculated that, in the 102 days of average dry season at the Cape of Good Hope, the excess of the evaporation from a burned or bare district over a bush or forest covered one would be 384,000 gallons per acre, or 384,000,000 gallons for a thousand acres.

Other experiments in England show that the evaporation from an open vessel in a room is eight inches in a year, while in a field or open place it is estimated at between thirty and forty inches. The soil in a forest being protected by the trees to a certain extent, and thus under cover, we may infer that evaporation would be less under such conditions than in an exposed place. It is a matter of common observation that roads running alternately through woods and open country remain longest moist in the woods. Railroad cuts show the same difference; houses in forests are damper than those in the open. These facts go to show that evaporation from the soil is slower in a forest than elsewhere. The only exception to this is where water is in excess. The evaporation activity of the trees is then excited to such an extent as to neutralize their protective effect upon the moisture in the soil itself. Thus trees in a swamp have a draining effect, while upon dry soil they will maintain humidity.

Nothing is better authenticated, both by scientific and general observation, than this last effect. In California we have learned to help the soil and maintain moisture by making the soil a mulch for itself by cultivation, that is, by keeping the surface pulverized. But this artificial process is unprofitable upon the steep mountain sides, where our forests are of most importance. Such an attempt would only result in the washing away of what soil there is on the mountains. In this connection it may be well to note the value of thorough cultivation. The driest soil contains thirteen per cent. of moisture. Schubler's experiments show that soil that weighs about a thousand tons per acre, when thoroughly pulverized and completely dried, will absorb from the atmosphere in twenty-four hours:

Sandy clay, - - -	Twenty-six tons of water.
Loamy " - - -	Thirty " " "
Stiff " - - - -	Thirty-six " " "
Garden mould, - -	Forty-five " " "

We are all familiar with the absorptive capacity of common salt. Carbonate of potash has also notable affinity for moisture, but it is the humus of the forest that possesses this power more than any other soil, absorbing to again give off from two to four times its weight in water. Forests mulch the ground under them. It therefore becomes plain, that forest fires, when not destructive to the trees, diminish the capacity of the forest for retaining moisture. The trees also protect the earth under them from the heat of the sun. Soil in the open is raised in temperature by the sun at a depth of one foot, fifteen degrees more than in a forest; consequently, the abstraction of moisture is correspondingly larger in the open. The difference is as 130 to 1,000 in favor of the forest. On the other hand, the experiments cited by Marsh show that in winter soil has been frozen to a depth of six feet on a bare knoll, while in the adjoining forest the soil was uniformly above the freezing point. This is most important in California in our high mountains, for rains upon frozen ground must run off without penetrating. So bare places would not act as reservoirs for later use, while the forested land would. Forests protecting land from excessive heat, protect the snows from rapid melting. The last place from which snow disappears, at the same elevation and isothermal line, is the forest. To the irrigators of parts of central and southern California this is of great importance, for, with the forests, the snow water of spring and early summer is long maintained, while without them the melting of the snow must be more sudden and the water resulting from it flow off in floods, so it is dissipated and the life-giving water is gone when most needed.

Another effect of forest action is that the snows in them melt from the ground side most and thus can reach the conduits that supply the springs, while snow upon frozen ground melts from above and runs off rapidly. The desiccating effect of winds is often great. Our dry winds in this State do much damage to fruit trees and dry the grain in the milk, diminishing the crop. Forests have a modifying influence upon such winds. In fact, a dry wind cannot originate in a frosted country, and, as it passes over forests, is diminished in intensity; even a belt of trees will have a pronounced protective influence on crops and trees to leeward of them and for some distance to windward also, for the trees bank up the air on this side, as is known by hunters, who, in striking a light, place the shelter of their hand on the lee side, having the light in the direction from which the wind comes.

Trees protecting the ground from the rapid radiation of heat, prevalent in bare places, diminish frosts. Thus a plant under shelter of a tree is less likely to be frozen than if it were in the open; but trees protect in this respect in another way. Megucher's experiments in Lombardy show that trees, like animals, maintain a constant temperature, that is somewhat modified, doubtless, as it is in animals, by hibernation. This temperature for trees is fifty-four degrees; forests in a country, therefore, have a similar effect to the sea. They maintain a more even degree of humidity and of temperature and equalize the climate.

The deposit of dew is more copious upon vegetation than it is upon the soil. Experiments show the difference to be more than double; the exact figures are: for grass, 4.75; for a white surface, 2.00.

In walking through grass or bushes after a dew the moisture will be apparent as compared to bare land. Fogs and mists are to a considerable extent condensed by the foliage of bushes and trees, and drip from them to the ground. On misty mornings I have frequently been wet through when walking in the chapparal of the Sierra Madres, while on the bare hillsides no moisture was visible. At Santa Monica where I spend the summer, on foggy days the trees may be observed to drip with water, and in thick fogs the drip is so continuous as to suggest rain as it drops on the fallen leaves.

Santa Monica, Cal. *Abbot Kinney.*

Correspondence.

Forest Planting in New England.

To the Editor of Garden and Forest:

Sir.—I have on a farm here some acres of land affording but poor pasturage, some of which is grown to bushes and some little clear land formerly devoted to grass. I have been led by Garden and Forest to consider the advisability of devoting the land to forest plantations of Ash, Chestnut or White Pine. If I am not trespassing too much on your time and kindness, will you please tell me what books or publications would be of service to me in learning the best method of planting and the result of experiments made in the planting of forests in New England.

My land differs from the sandy soil of the Cape, where I think successful experiments have been made, in being stronger and of a kind considered good grass land. Whom would you recommend as an expert in the matter?

Truly yours, *William Simes.*

Peterham, Mass.

[There is no American Manual of Arboriculture, and the foreign works upon this subject, based upon conditions dissimilar to those which prevail in this country, have little practical value here. The general principles of tree planting, however, applicable to the United States as well as to Europe, will be found in "The Forester," by James Brown, published in Edinburgh, 1882, and in "Arboriculture," by John Grigor, Edinburgh, 1868. There are papers relating to tree planting in Massachusetts, in the Reports of the Secretary of the State Board of Agriculture of that State for 1875, 1878, 1882 and 1885, and there is much information upon this subject, valuable and otherwise, scattered through the reports of Agricultural Societies and Boards of Agriculture of almost all the Northern and Western States. The most interesting plantations of forest trees made in Massachusetts are those of White Pine in Middleborough, Raynham and Bridgwater, of which an account will be found in the Transactions of the Massachusetts Horticultural Society for 1885; the Pitch Pine plantations in Orleans and in other towns on Cape Cod, of which a description will be found

in the report of the Connecticut State Board of Agriculture for 1877–78; the large plantations of foreign trees, principally Larches, Norway Spruces, Scotch Pines, Oaks and Birches, made by the late Richard S. Fay, near Lynn, and by Mr. Joseph S. Fay, at Wood's Holl. There is also an instructive plantation of European Larches on Mr. J. D. W. French's farm in North Andover, which was described in the first issue of this journal; and in East Greenwich, Rhode Island, large plantations of Larch and White Pine have been made during the last ten years upon the farm of Mr. H. G. Russell, where these trees have made a satisfactory growth upon sterile and apparently barren land. Land which is strong enough to grow good white ash is too good for pine, which will grow to a large size on dry, gravelly ridges. The land which our correspondent describes would probably grow either chestnut or hickory, both valuable woods, for which there is an active and increasing demand. Chestnut and Hickory trees can be raised by planting the seed where the trees are to remain, and are, therefore, more cheaply raised than Ash or White Pine, which must be transplanted from the nursery. If the land in question is fenced, so that animals can be kept off of it, and planted in the spring with chestnuts and hickory nuts, it will be covered in a few years with these trees, and many others, which will spring up spontaneously in great variety, as soon as cattle are kept out. The nuts for planting should be gathered as soon as ripe and at once mixed with sand to prevent them from drying, as drying destroys their power to germinate, and stored in a cellar from which the frost is excluded. In the spring, when the frost is out of the ground, a man can plant the nuts very rapidly by making a hole about an inch deep, or a little deeper for large nuts, with an ordinary walking-stick, dropping a nut into the hole and then pressing down the soil over it with his foot. The nuts should be planted three or four feet apart, but when the ground is very rough and rocky, they will have to be put in without regard to exact distances and wherever the best soil can be found.

There is no man in the United States who has had a longer and more varied experience in tree planting than Mr. Robert Douglas, of Waukegan, Illinois, and his advice in such matters can be adopted in perfect confidence.—Ed.]

To the Editor of Garden and Forest:

Sir.—Black Walnut is not native north of Niagara, but has been raised and produces nuts as far as Quebec. Will the wood of this or any other tree be likely to prove sufficiently sound for manufacturing purposes when grown north of its proper habitat? There is no experience in Canada to show this.

Norwood, Canada. *T. M. Grover.*

[Trees can generally be induced to grow in cultivation much further north—that is, in a colder climate—than that in which they are found growing spontaneously, and when the change is not too great they may produce sound timber. The continental distribution of plants being regulated, to a large extent, by temperature and moisture, the fact that any tree, like the Black Walnut, for example, is not found growing spontaneously north of a certain latitude, shows that this is the limit where, unaided by man, this particular tree has been able to maintain itself in the struggle for existence, which is constantly going on between all organized beings; and that if moved beyond that limit and deprived of man's constant assistance, it will be in great danger of being compelled to succumb, sooner or later, to unfavorable conditions. For this reason it is wise to select the native trees of any region to plant for timber in that region. It is impossible to predict that any others will reach maturity and produce valuable material.—Ed.]

To the Editor of Garden and Forest:

Sir.—It gives me pleasure to note that Garden and Forest constantly advocates the use of more natural forms in the arrangement of plants for the embellishment of public and private grounds. Such articles as that on the planting of hardy bulbs in the grass cannot fail to bear good fruit. How many barren spots there are that need such a brightening up at spring-time as only a few Daffodils can give them. And why should not some of our native hardy plants be used in such places; for instance, the Blood-root, Dicentra or Hepatica, and for later blooming the Columbine, Mandrake, Meadow Lilies, Golden-rod and Asters. I have found that these wild beauties easily adapt themselves to a place seemingly most unfavorable for their life and growth, so I can easily imagine what might be accomplished were they distributed over larger grounds. The woods are not always easy of access, but we can bring a bit of them close to our homes.

I have noticed at Kew what might be termed a perpetual garden, which your readers might easily imitate, or even improve upon, by making a still bolder departure from the conventional. There is a serpentine walk, lined on either side by banks of rock-work four or five feet high. These are planted with English hardy plants as well as Lilies and other bulbs, and many of those that come under the general head of alpine plants. They are scattered about quite naturally, and are so arranged that there is an abundance of bloom throughout the season. To those possessing rocky grounds this suggests unlimited possibilities in the formation of a natural garden of great beauty, and one that offers a large return for a very little labor.

Brooklyn, N. Y. *H. S. A.*

To the Editor of Garden and Forest:

Sir.—In an interesting article on "Cultivation of Native Ferns," by Robert T. Jackson, in your journal of the 5th inst., some examples are given of "the extreme hardiness and vitality of Ferns," to which I can add a perhaps still more remarkable illustration.

About ten years ago a lady living in New Zealand sent me, by mail, covered with a piece of brown wrapping-paper and tied with a string, six roots of New Zealand Ferns. When I received them here in California they were, of course, absolutely dry and apparently absolutely dead; but wishing to test the matter, I poured some tincture of gum camphor into warm water and sprinkled the Ferns with the mixture, leaving them lying upon wet moss for twenty-four hours, after which I planted them in pots. One plant of *Pellæa falcata* commenced to throw up new fronds in a few days after its receipt, and is still growing in my conservatory. I do not remember how much time was occupied in the transit, but I think it was about three months, as the facilities for rapid communication by mail in those days were greatly inferior to those of the present time.

Santa Barbara, California, September, 1888. *Lorenzo G. Yates.*

Periodical Literature.

The leading article in *The Cosmopolitan* for August is Mrs. S. B. Herrick's on "The Romance of Roses." The author's aim has been to trace the continuance and explain the strength of that preference for the Rose above all other flowers which has distinguished every people to whom it has been well known; and, together with a great deal of romance, she gives us many interesting facts. The most interesting are perhaps those which reveal the use the Romans of the Empire made of Roses—a use which makes our utmost extravagance seem positive parsimony. When we read of floors carpeted with fresh Roses a foot deep, covered with a fine netting that the guests might walk upon without disturbing them; of a single feast given by Nero, when a sum equivalent to $100,000 was spent for the Roses alone; of water parties at Baiæ, where "the whole lake of Lucina was covered with Roses, which parted before the moving boats and closed after them as they passed;" of Lucius Verus sleeping upon cushions of net stuffed with freshly-gathered Rose-leaves, and of Heliogabalus demanding that his couches, beds, floors, and even porticoes, should be kept perpetually covered with them—how can we think that we are extravagant in our use of Roses? At first the Roses required in Rome were imported from Egypt, but later on a sufficient supply seems to have been grown in Italy, where, according to Ovid, they were made to bloom twice a year by means of hot water, carried, as other writers explain, in pipes, much after the manner of to-day. The love of mediæval ages for the Rose has become proverbial, and it expressed itself in many court as well as popular customs. For centuries before the reign of Louis XIII. the peers and dukes of France, and even the King of Navarre, were obliged to present Roses, in their season, to the Parliament of France

as a symbol of the suzerainty of the King; and the right to represent them at this ceremony was eagerly disputed for among the highest nobles of the realm. Similar tributes were frequently exacted by minor suzerains, and even in real estate transactions a Rose, or a bushel of Roses, often appeared as part of the payment or an equivalent therefor. The Golden Rose, which the Pope still annually bestows upon some one whom he desires to honor, was first given in 1366. The form of the present was chosen as significant of the fragility and evanescence of life, and the indestructible, incorruptible material as emblematic of the immortality of the soul. At least, Mrs. Herrick tells us, ancient writers thus declare; and, whether it be accurate or not, the explanation is a poetical one. The drawings by the author, which accompany this article, are both faithful and poetic; the others are less good, and the colored plates are beneath criticism.

Blackwood's Magazine for August contains an interesting article called "In a Garden of John Evelyn's" which unites a sketch of Evelyn's life with a description of the garden which he assisted in laying out for a friend—one of the Howard family, who afterwards became the Duke of Norfolk. This garden lies at Chertsey, in Sussex, about thirty miles from London, and in the neighborhood of Wotton, Evelyn's old home. As Pope and Addison worked in the eighteenth century, so Evelyn worked in the seventeenth, and still more influentially, to popularize a love of nature among his countrymen. Pope's and Addison's efforts tended to turn men away from the formal towards the natural style of gardening. In Evelyn's earlier time, landscape gardening, in the meaning we now attach to the word, had not as yet been thought of. Nevertheless the truest love for nature and the most admirable taste characterize all his works on gardening, and the formal gardens which he loved are by no means to be confounded with those which, later in his own century, were mere arrangements of clipped trees and regular walks crowded with a mass of artificial constructions. His taste had been trained, during many years of foreign travel, on the beautiful early gardens of Italy, and something akin to them he tried to produce in England, with a wise regard, however, for differences in climate, habits of life and artistic conditions. The garden at Chertsey is said to be better preserved than most others of its time, and the description given of it in *Blackwood* is certainly most attractive. "It is perhaps an ancient pleasance more than a garden such as belongs to the present day. . . . The growth of years has but added to its charm, and has produced the grandeur of the trees, which must be the chief attraction to a pilgrim to the shrine of 'Sylva Evelyn.' . . . There is as much shade as sunshine around us here. . . . Few signs of modern taste have entered; 'bedding out' and those monsters of horticulture known as *massifs* are unknown. There is not a single ribbon-border anywhere, nor beds of tropical plants. . . . Here is a space set apart for a rose-garden, and the Roses have had their way in it for years. Trellised arbours lead to it, and the entrance is darkened by overhanging clusters. Below the rose-garden the ground slopes to the margin of the stream. . . . There are thickets along the stream and many a winding walk below tall trees and all kinds of flowering shrubs overhanging the stream. We notice fewer brilliant effects than tender colors and sweet scents, except at intervals, where great scarlet Poppies flaunt in the sun, contrasting with yellow Day Lilies, or spires of blue Lupin or white masses of golden Crocus catch the sunshine in early spring. And here and there among their more cultivated sisters there is space for a wild flower to find shelter. . . . Here is a group of Ilex trees, whose shadow falls upon some old brick-work, and flights of stone steps which lead up to the chief attraction and crowning feature of the garden, a broad, grassy terrace, stretching in long perspective for a quarter of a mile. Half way down its length is a semicircular recess and a pool of clearest water covered with Water Lilies and dark with overhanging trees, which hide the entrance to the grotto; . . . and rising over all the splendid group of Firs. . . . On the old walls which bound the terrace on the left there is a delicious mingling of fruit and flowers. . . ."

Recent Plant Portraits.

Oncidium Lietzei, var. Aureo-Maculatum. *Gartenflora*, August 15th.

Plagianthus Lyalli. *Gardeners' Chronicle*, August 25th; a malvaceous shrub or low tree, with handsome white flowers three-fourths of an inch across. This will probably make an interesting and valuable addition to the list of hardy shrubs which can be cultivated in gardens in our Southern States.

Schomburgkia tibicinis. *Gardeners' Chronicle*, August 25th.

Botanical Magazine, September:

Spathoglottis Vieillardi, *t.* 7,013; native of the Sunda Archipelago and New Caledonia; a robust species, with handsome pale lilac, or nearly white, flowers, two inches across.

Caraguata Andreana, *t.* 7,014; native of New Grenada; is a showy Bromeliad, discovered by Monsieur Ed. André on the Cordillera of Pasto during his memorable South American journey, and introduced by him into cultivation.

Masdevallia Mooreana, *t.* 7,015.

Narcissus Broussonnetii, *t.* 7,016; "this is a very curious plant. It is just like the white Tazetta Narcissi (*Italicus*, *Panizzianus*, etc.) in habit, leaves, perianth, stamens and pistil, but the corona is very nearly or entirely obliterated. It was carefully studied by the late Jacques Gay, one of the most painstaking botanists who ever lived, and his conclusion was that it ought to be regarded as forming a monotypic genus. It was first found about the beginning of the century in the neighborhood of Mogadore by Broussonnet. Nothing more was heard of it until 1873, when specimens were sent by Dr. Leared to the late Daniel Hanbury. Now it has been introduced alive, and was flowered last winter both at Kew and by Sir E. G. Soder at Flone. It will probably not prove hardy in the open air in England."

Erythronium Hendersoni, *t.* 7,017, recently described and figured in this journal (p. 317).

Exhibitions.

The Pennsylvania Horticultural Society.

THE fifty-ninth annual exhibition of this society, held in Philadelphia last week, was not as large as some of its predecessors, but for the number of remarkable specimens displayed the show has not been surpassed for several years. Probably the finest plant in the hall was a *Kentia Forsteriana*, exhibited by Wm. Joyce, gardener to Miss Baldwin. Its foliage is very clean and bright and the plant is fully twelve feet high. Specimen plants of *Latania Borbonica*, *Cycas circinalis* and *Pandanus Veitchii* followed hard after this in the order of merit. A remarkable *Cissus discolor*, covering an oval frame four feet high, well furnished with foliage, some of the leaves measuring quite nine inches long, was exhibited by Robert Wark, gardener to C. H. Clark. An *Alamanda Schottii*, also grown on a frame and well set with flowers and buds, showed blooms quite four and a half inches in diameter. It was exhibited by Wm. Frederick, gardener to W. W. Frazier, of Jenkintown. Thomas Long, gardener to A. J. Drexel, exhibited a well-grown specimen of that miniature Palm, *Livingstonia Altissima*, and its beauty made visitors regret that it was so scarce and costly. A specimen of *Cocos Weddelliana*, exhibited by Mr. Joyce, is six feet high and in fine condition. Chas. Ball contributed a well-colored plant of the variegated Pineapple. Three fine plants were shown of *Davallia Fijiensis*, a Fern that was grown by a Philadelphia florist for ten years before it was named and distributed by Wm. Bull. It was sent to the Philadelphian by a friend who visited the Fiji Islands.

The collection of fifty Caladiums from "Wootton," the country-seat of Geo. W. Childs, were fine examples of good culture. John M. Hughes, the gardener to Mr. Childs, deserves great credit for this display, as it occupied nearly one side of the hall. Hugh Graham's son received a first premium for six fine specimen plants of Maranta, and Chas. D. Ball took first for a grand collection of twenty-five specimen Ferns, including the finest Adiantums, Davallias and Gleichenias.

Henry A. Dreer exhibited *Aristolochia elegans*, a novelty from Brazil. It is a grand vine and certain to become popular, if, as is claimed, it will bloom the same season from seed sown in the open air in spring. Mr. Dreer also exhibited the finest collection of tuberous-rooted Begonias ever seen in Philadelphia. Many of the flowers measured four and one-half inches in diameter.

The tank of Water-lilies contained examples of *Nymphæa Zanzibarensis*, *N. Devoniensis* and *Nelumbium speciosum*, and a smaller tank was filled with the comparatively new *Pontederia Crassipes*, from British Guiana, with blooms resembling at first sight a pale blue Iris. Cut Roses of admirable quality for the season were exhibited by Edwin Lonsdale, Craig & Bro., Pennock Bros. and Coles & Whiteley. Some Madame Cuisins were particularly fine. The Gloxinias and Petunias exhibited by Henry A. Dreer and the daintily arranged Pansies

and single Dahlias by O. R. Kreinberg were well worth the attention they received.

The wild flowers collected by Allen Barr were well chosen, but they lost some of their educational value because they were not named.

The Cattleya El Dorado, which is a beautiful pink, was thought by many retail florists to be one of the most desirable for use in the arrangement of flowers. Pennock Bros. exhibited a large urn and Heron & Nesbit a vase of cut flowers, both of which received special premiums, and Miss Anna A. Bisset won the first prize for a cross and wreath. Archibald Lawson, gardener to H. H. Houston, Chestnut Hill, exhibited some very handsome grapes, the clusters of White Nice, Santa Cruz, Prince Albert and White Syrian being particularly fine.

The attendance was only "fair." It is strange that an exhibition as good as this should ever lack a generous attendance in any of our large cities. But the question how to make horticultural exhibitions meet expenses, is one that too many of our oldest and best societies are still compelled to consider.

H. H. Battles.

Notes.

Florida Persimmons are sold as a novelty by New York fruiterers for 60 cts. a dozen.

Autumn leaves from New Jersey thickets are tastefully combined by New York florists, and sold by the dozen or the cluster.

Dill and Fennel have never been brought in such quantities to the New York markets as they have this season. There is also an increased demand for Tarragon.

Mr. William Court, well known to many American horticulturists as an agent of the Veitch Nurseries, died suddenly of apoplexy, in London, on the 17th of last month.

The finest Crawford Peaches are now coming from Baltimore, where they have been kept back in cold storage-houses. They sell for $4 a crate, and for 75 cts. and $1 a dozen.

Mr. J. A. Lintner estimates that there are in the United States 1,000 species of insects which are injurious to fruits, and of these 210 are known to live at the expense of the Apple-tree.

For some reason trees and shrubs are later than usual in assuming their autumn colors, but for a week past *Berberis Thunbergii* and *B. Sinensis* have fairly glowed with the brightness of their orange and scarlet.

A Pearl River plantsman is bleaching the tops of Russia Turnips, which are a hot-house delicacy abroad, and which are prepared for the table much the same as Sea-kale. These and Cauliflower, also forced in hot-houses, will be in market about Christmas.

Professor James argues that it is quite as legitimate to expend Federal money to prevent the soil from flowing down mountain sides and filling up rivers as it is to expend money for clearing out their channels when once filled; and that it ought to be permissible to expend Federal money to protect the stream itself, if it be proper to stock and re-stock it with fish.

Juglans Mandshurica is a most promising nut tree from Japan. A tree in the Arnold Arboretum, from seed planted in the fall of 1879, has this year borne two bushels of nuts. The fruit is larger, more nearly spherical and less rough than our common butternut and is of very good flavor. The nuts are borne in clusters with from six to thirteen together. The tree has borne now for five years, and, besides the valuable crop it yields, it gives good promise as an ornamental tree.

The *Tribune*, of San Luis Obispo County, California, reports some wonderful yields of Onions in the valley of the Arroyo Grande. The product of one acre was weighed, and amounted to 66,905 pounds, or more than thirty-three tons. This would be by measurement 1,194½ bushels. One of the Onions measured seventeen inches in circumference. A Radish in the same valley is said to have weighed thirteen pounds, being twenty-one inches in girth and thirty-eight inches long.

The report of Mr. J. H. Hart, the new superintendent of the Trinidad Botanic Garden, for the year 1887, has appeared. This is one of the richest, as it is the oldest, of the botanic gardens in the British West Indies, having been continuously maintained during a period of seventy years. Its usefulness is now likely to be greatly increased under Mr. Hart's management, which is first directed properly to the permanent establishment and arrangement of an herbarium, without which no botanic garden can be operated. The task is the more important as Trinidad possesses a flora of great variety, combining West Indian and South American plants, besides many indigenous to the island.

Experiments recently made by Prof. Schubeler, a Norwegian plant-geographer, confirm the belief that most plants produce much larger and heavier seeds in high northern latitudes than in those further south, the difference resulting from the prolonged influence of light consequent upon the length of the summer day at the far north. One of the most remarkable instances he noted was that of Dwarf Beans, which gained sixty per cent. in weight when taken from Christiania to Drontheim, a distance of no more than four degrees; and another was that of Thyme, which, taken from Lyons to Drontheim, gained seventy-one per cent. All our cereals likewise show a marked increase in weight when grown at the far north.

The new museum building of the Royal Botanical Garden in Breslau, Germany, was recently opened. With its fittings it cost about $50,000, and it contains, in addition to the large rooms in which the collections are arranged, a library, a lecture-room with seats for 100 persons, an apartment for the Institute of Plant Physiology, another of a large size for microscopical work, and a number of smaller ones devoted to different purposes. The collections include an herbarium; a collection of woods, seeds, fruits, specimens prepared in alcohol, and pictures of the most useful exotic plants, so arranged and catalogued that the general public may be interested and instructed; a colonial botanical collection; a phyto-palæontological collection; and a collection of cryptogams. The Director, Professor Engler, invites correspondence with a view to the exchange of duplicates.

Bulletin No. 2, just issued by the Forestry Division of the Department of Agriculture, contains several interesting papers grouped together under the general title of the Forest Conditions of the Rocky Mountains. Some idea of the depredations upon the National Forests, and the powerlessness of government officials to prevent them, can be formed from the extracts here given from Reports of the Commissioners of the Land Office. Professor James writes of the relations of the Government to the Forests, showing that there is abundant precedent, if any were needed, to justify state and national legislation for protecting our forests. The Report of Colonel Ensign gives an account of the forests in the various states and territories in the Rocky Mountain region. George B. Sudworth writes of the forest flora of the region, giving an artificial key to facilitate the identification of the principal species, a work which would have been more useful if all the known species had been included. The needs of the Yellowstone Park are considered by Dr. Arnold Hague, and Mr. Abbot Kinney writes of the forests of some of the Southern counties of California. A summary of legislation for the preservation of timber or forests on the public domain is given by Mr. N. H. Egleston. The effect of the climate of Colorado upon trees is discussed by Mr. George H. Parsons, and Mr. Fernow writes of the formation and preservation of snow slides and avalanches.

Writing from Rome, in the *Christian Register*, Miss Augusta Larned says: "One of the most beautiful of the old cloister gardens is attached to the sumptuous church of St. Paul's Outside the Walls. . . . The whole garden is filled with Roses and sweet herbs. In the middle stand the old well and the sun-dial, but everywhere the pink buds and blossoms are turned towards the sun. The midday warmth brought the odors of Lavender, Rosemary and Mint—scents all the brotherhoods seem to love by instinct. Such depths upon depths of peace and quietude filled this monkish Rose-garden I felt I could sit there for hours and muse on a skull without getting too strong an odor of our mortality. For the glorious Italian spring triumphed over death and decay. . . . The prettiest monastic garden I have seen in Rome adjoins the church of San Pietro in Vincoli, where the 'Moses' of Michael Angelo and the 'Saint Margaret' of Guercino are to be seen. . . . The monastery is now turned into a school for engineers; but the polite attendant is always ready to open the glass door and let you into a grassy nook planted with tall old Orange trees, covered with the golden fruit, into which the Banksia Rose has clambered with a perfect tempest of blossoms, while spring flowers and blooming shrubs fill it to overflowing, run riot over the paths, and paint themselves in vast nosegays against the dark green and golden background. A pair of rooks were fluttering in the shrubbery, the first I had seen, and bright green lizards slipped away between the stones of the old wall. The silence and freshness were indescribable; and, as usual, the vanished brotherhood had left a savor of sweet, old-fashioned herbs behind them."